



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,893	07/16/2003	Joseph R. Montano	50679-2 CIP	8930
21874	7590	12/16/2004	EXAMINER	
EDWARDS & ANGELL, LLP			CAMERON, ERMA C	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	

1762

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/620,893

Applicant(s)

MONTANO ET AL.

Examiner

Erma Cameron

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-20 is/are pending in the application.
- 4a) Of the above claim(s) 3-6 and 16-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 8-15, 19-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

1. Applicant's arguments filed 12/6/2004 have been fully considered but they are not persuasive.

#### ***Election/Restrictions***

2. Applicant's election with traverse of organosilicon as B) in the reply filed on December 6, 2004 is acknowledged. The traversal is on the ground(s) that a claim to organo-silicon compounds and silsesquioxanes as a Markush group of two, sufficiently few in number that an examination can be made of the entire claim. This is not found persuasive because within each of organo-silicon compounds and silsesquioxanes are multiple compounds; each is a class of compounds, and such contains many members. For this reason, the search of TWO such large classes of compounds would be a burden.

The requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Rejections - 35 USC § 102***

3. The rejection of Claims 1-2, 9-10, 13-15 and 19-20 under 35 U.S.C. 102(b) as being clearly anticipated by WO 02/24974 is withdrawn because of the amendment filed 12/6/2004.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 8-15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/24974 taken in view of Merchant et al (6221176) further taken in view of Hawley's Condensed Chemical Dictionary, Twelfth Edition, 1993.

'974 teaches treating a metal, such as copper in a multilayer printed circuit board, with an adhesion promotion composition, such as a bath of oxidizer/acid/corrosion inhibitor, called an alternative oxide bath (p11), to micro-roughen the metal (p 9, 11), followed by treatment with an aqueous wetting agent composition, which acts as a primer for the next layer, a polymer, such as a pre-preg, in order to improve the adhesion between the metal and the polymer (p 7-9). The bond between metal and polymer may be enhanced with pressure and heat (p 15).

'974 teaches that the wetting agent that is used as a primer is at 0.5-30% by weight (p 11), which overlaps with applicant's claimed range.

'974 teaches that the bond strength is 6.3-7.3 lbs/in<sup>2</sup> (p19), which overlaps with applicant's claimed ranges.

'974 fails to teach an organosilicon as a primer layer.

'176 teaches that a silane coupling agent, such as an aminoalkoxysilane, may be used on copper in a circuit board to enhance adhesion of a polymeric layer (17:20-24:41). It would have

Art Unit: 1762

been obvious to one of ordinary skill in the art to have substituted the silane coupling agent of '176 for the wetting agent primer of '974 with the reasoned expectation of equivalent results, because both materials can serve as tie coats between metal and polymers.

Hawley's Dictionary teaches that silanes are noted for their ability to bond organic polymer systems to inorganic substrates (see printout). Therefore, the adhesion promotion of the '176 silane between the copper and polymeric layer is inherent to the silane.

The applicant has argued that the silane of '176 is serving a different purpose, that of preventing microcracking in the copper. However, the adhesion promoting properties of the silane are inherent to the silane, as attested to by Hawley's.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


Art Unit: 1762

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erma Cameron whose telephone number is 571-272-1416. The examiner can normally be reached on 8:30-6:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ERMA CAMERON  
PRIMARY EXAMINER  
December 14, 2004

Erma Cameron  
Primary Examiner  
Art Unit 1762